JPSS Cal/Val VIIRS Meeting (Ocean Color Session Wednesday 10)

West Coast Ocean Color Products & NOAA VIIRS Cruise Comparisons

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10-11 August 2016 NOAA Center Greenbelt, Maryland

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Outline

1.) Southern California Aeronet SeaPRISM (Platform Eureka)

Comparison of Side-by-Side SeaPRISMS

Correlations on individual Bands

Time Series Comparisons: March 2016 - 4 August 2016

2). 2015 October Cal/Val Cruise

Satlantic Optical Profiler ('HyperPro')

SPectral EVolution Above Water Spectrometer (SPEV) SPEV Measurement Protocols

CDEV Dragasissas Dratasala

SPEV Procoessing Protocols

Automated processing codes

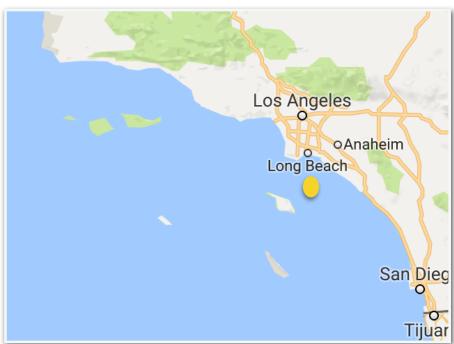
Assumptions, Settings, Usage

Comparison of HyperPro and Spectral Evolution at 2, 6, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27

Comparison of side-to-side SeaPrisms in Southern California



Map



Two SeaPRISM's



Timeline of recent events at Southern California Aeronet 'Platform Eureka' SeaPRISM

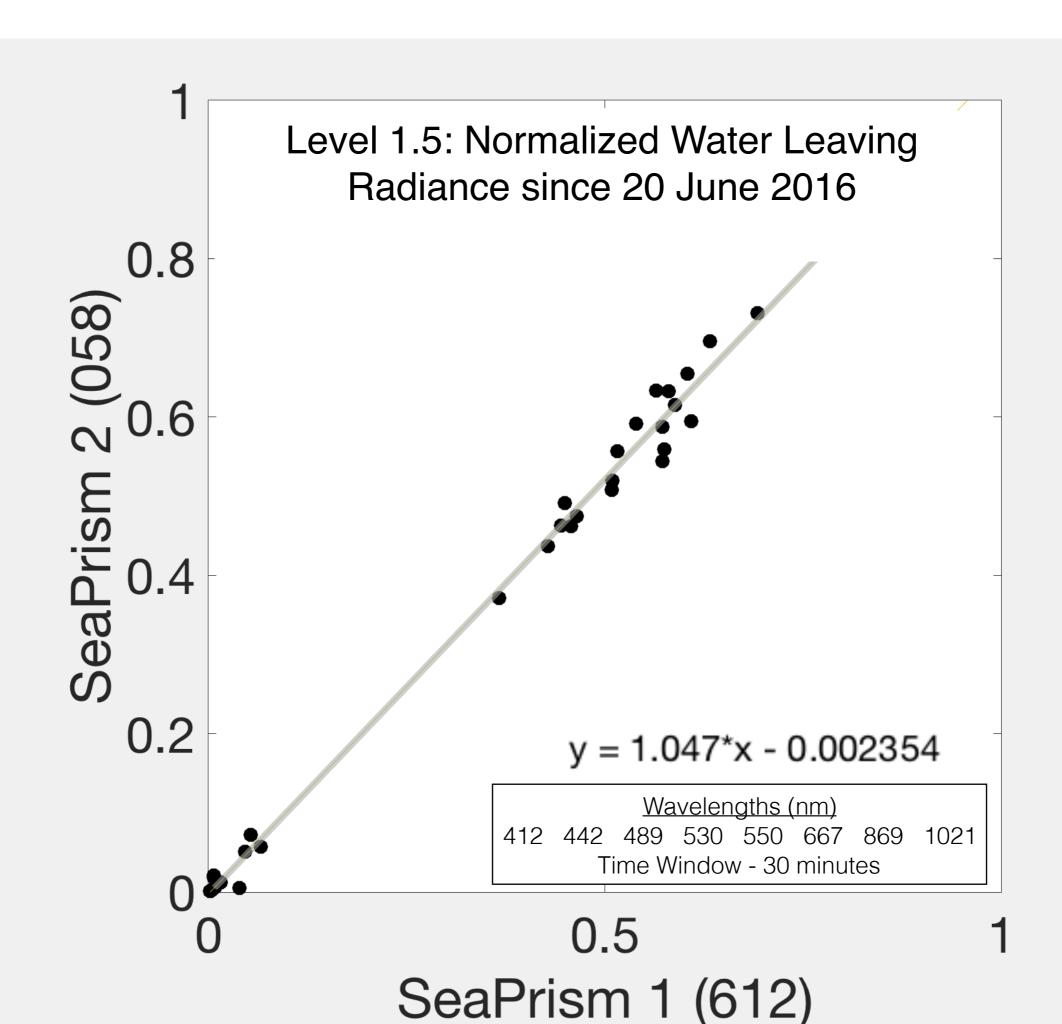
02/11/2016: CIMEL #612 was removed from Platform Eureka and sent to GSFC for calibration

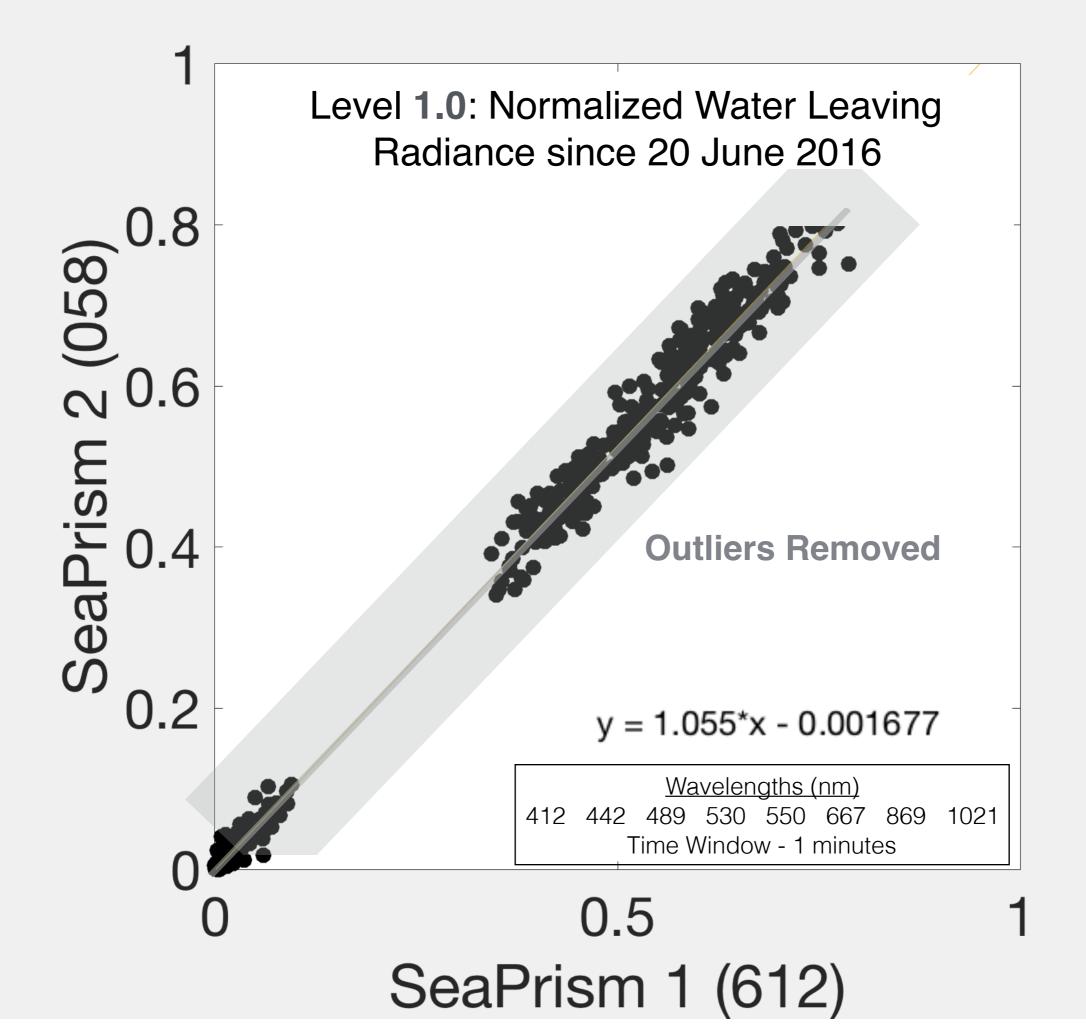
03/08/2016: Asea value on CIMEL #58 changed from -50 to -90 (per Giuseppe and Mikhail)

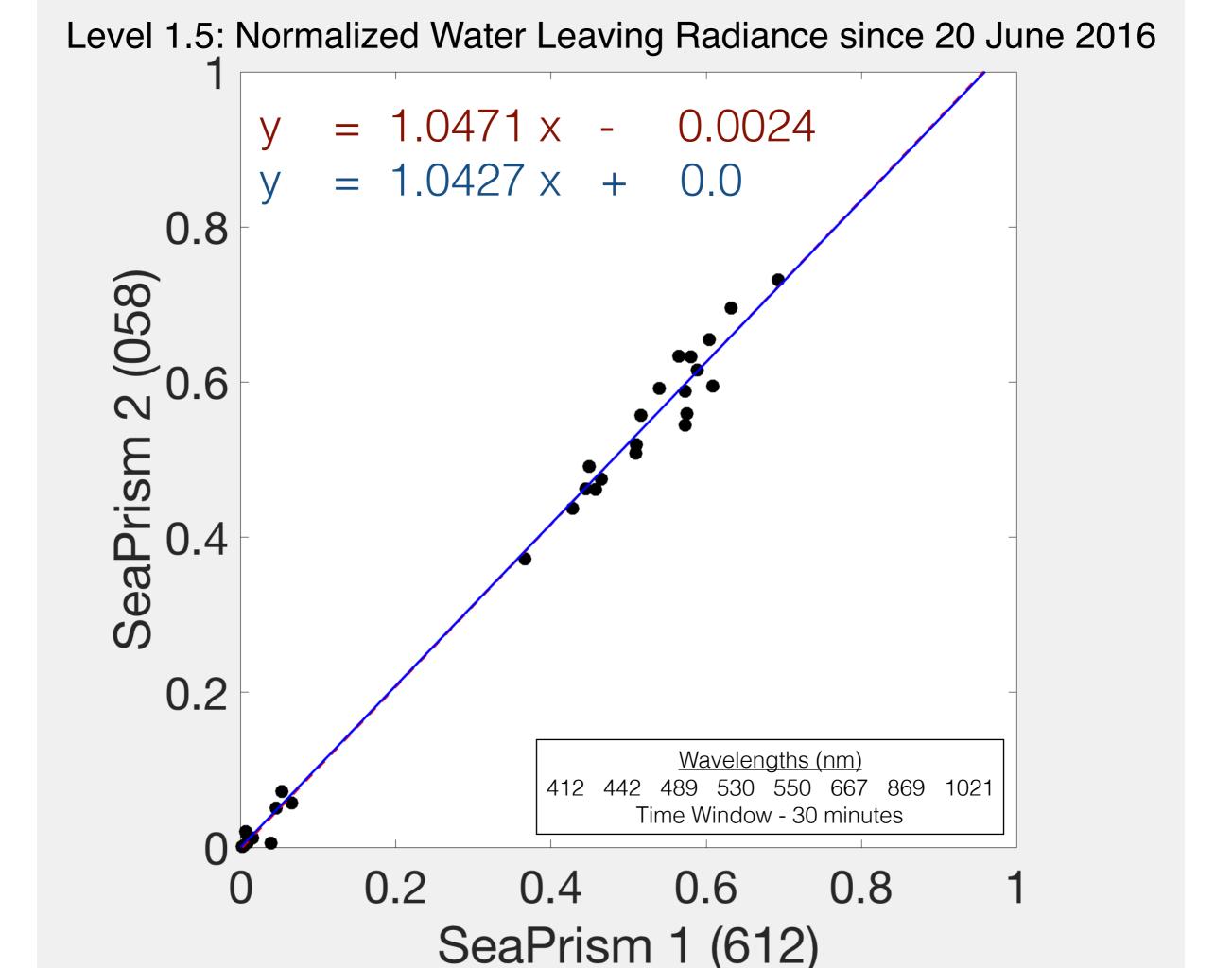
04/27/2016: Requested site access to reinstall #612. Site access rules were changed and new Access Agreement was required

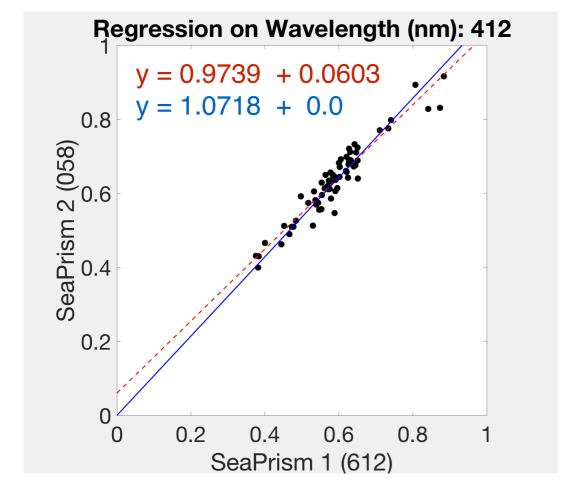
06/20/2016: CIMEL #612 reinstalled after calibration.

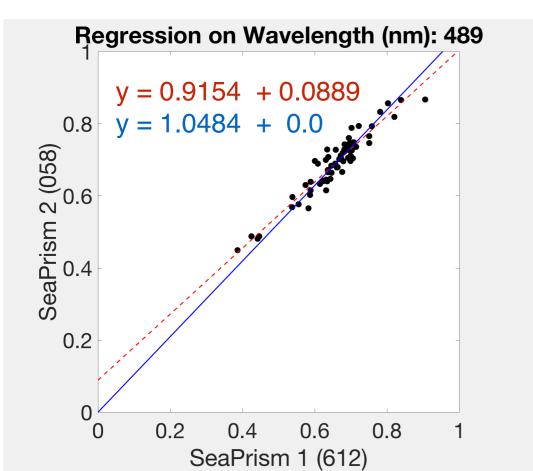
Based on this information, the best dates for side by side comparison are from 06/20/2016. That is when #612 has updated calibrations and #58 has correct Asea values.

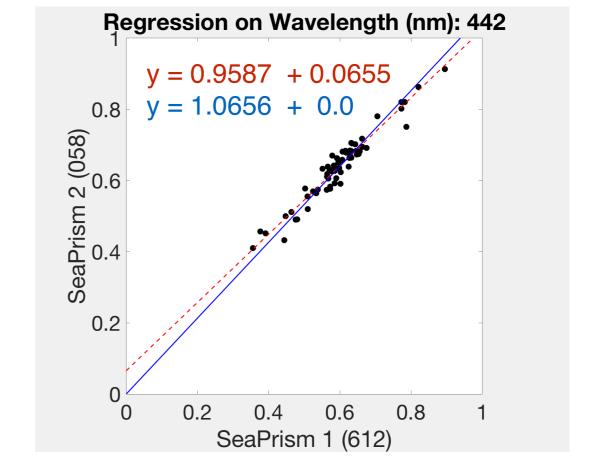


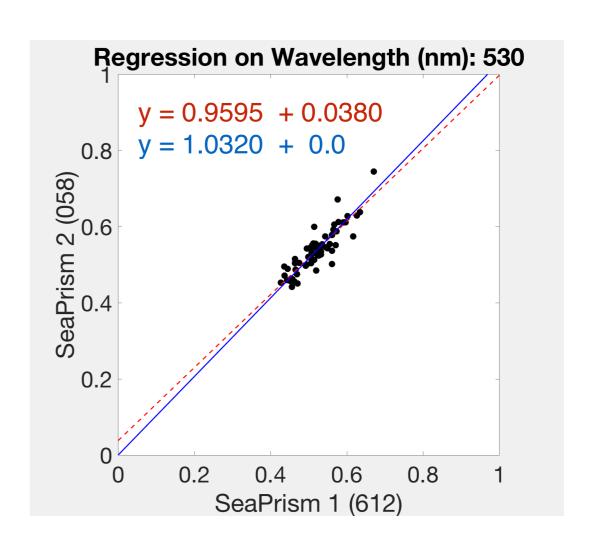


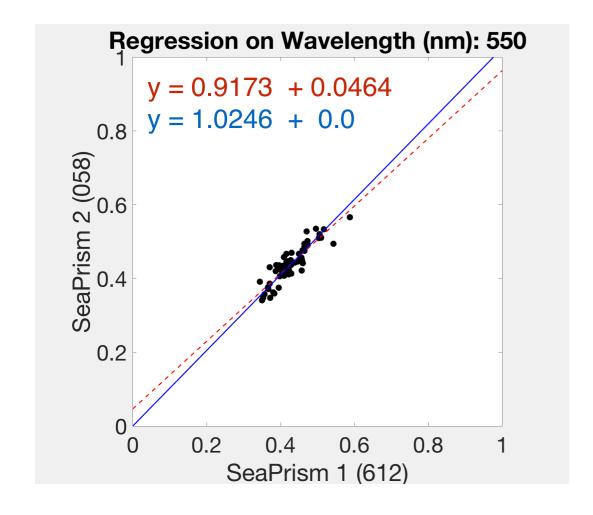


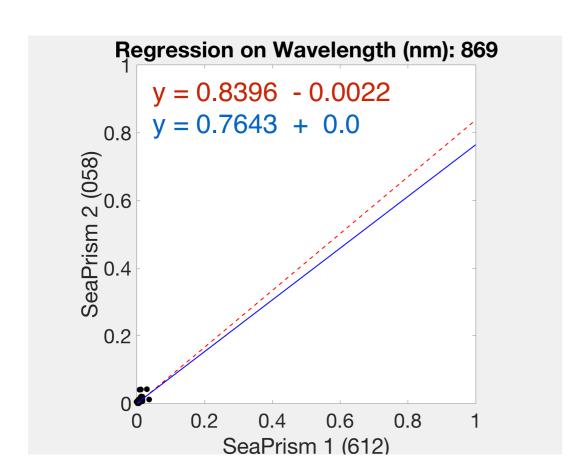


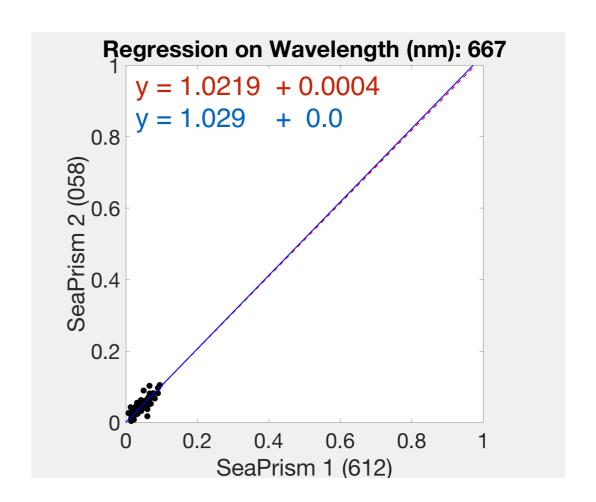


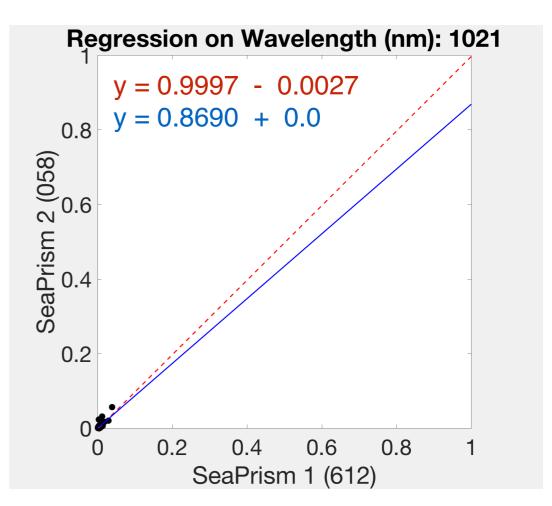


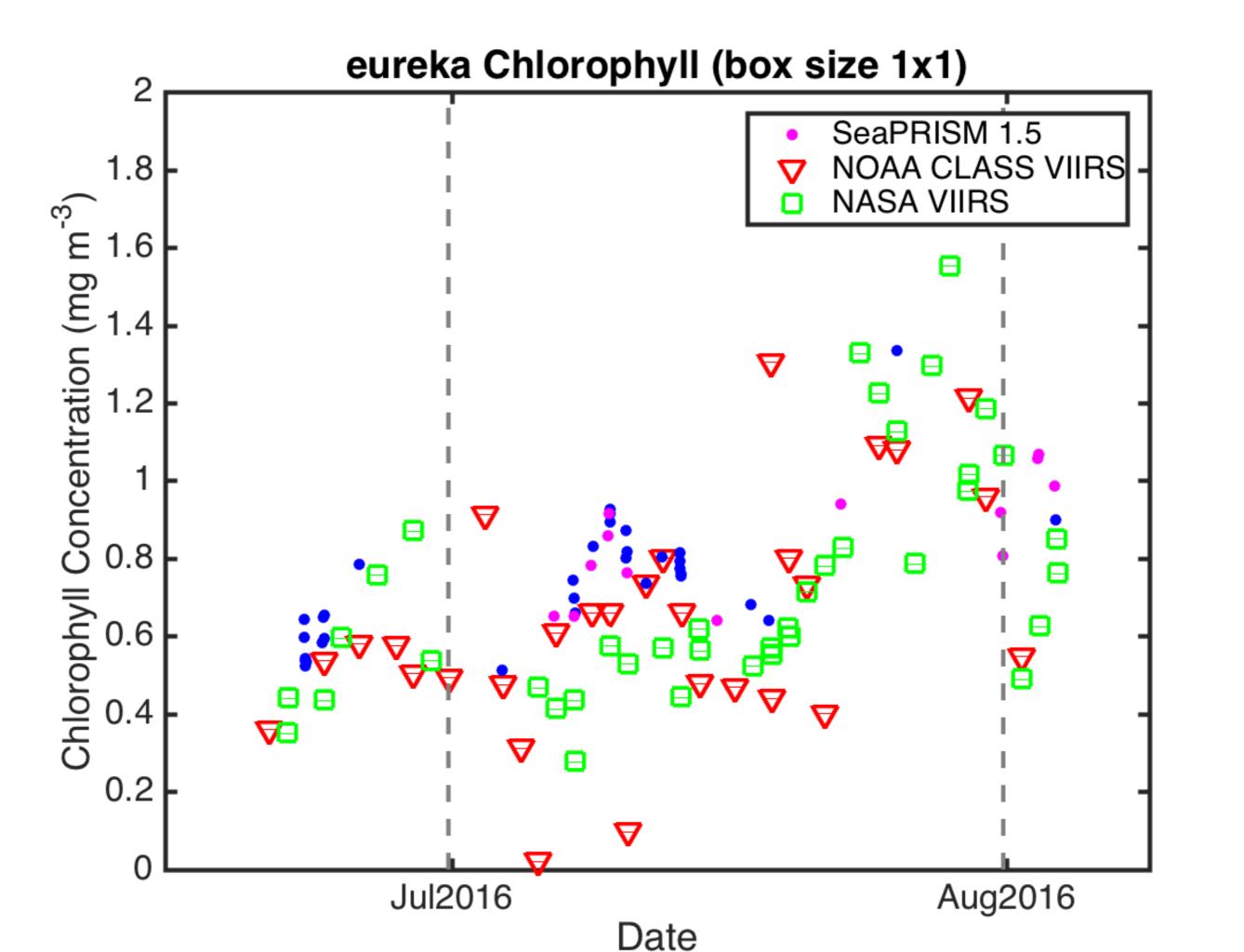












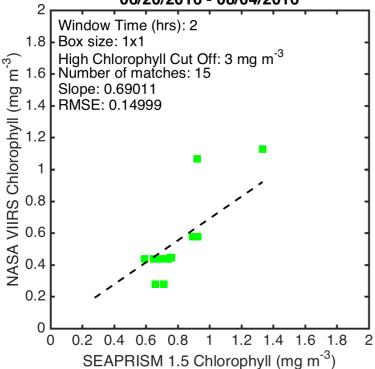
NOAA VIIRS nLw < SEAPRISM nLw
nLw CHL-a 412 444 489 550
Slope 0.69 0.75 0.85 0.93 0.83

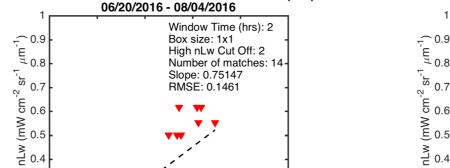
20 June - 4 August 2016, 1x1, approx 14 matches

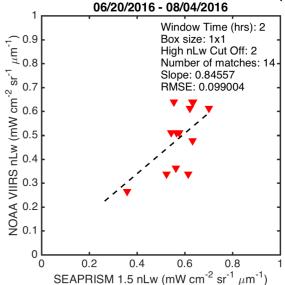
VIIRS 0.3

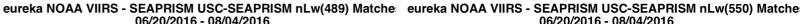
O.2 O.0 0.1

eureka NASA VIIRS - SEAPRISM USC-SEAPRISM CHL Matches 06/20/2016 - 08/04/2016

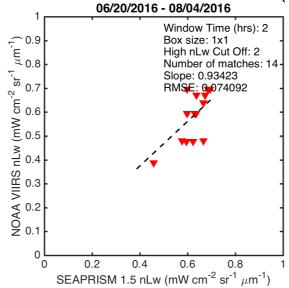








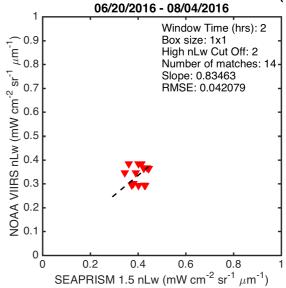
eureka NOAA VIIRS - SEAPRISM USC-SEAPRISM nLw(412) Matche eureka NOAA VIIRS - SEAPRISM USC-SEAPRISM nLw(444) Matche



0.4

SEAPRISM 1.5 nLw (mW cm⁻² sr⁻¹ μ m⁻¹)

0.6



Comments:

SeaPRISM discripencies at Platform Eureka are resolved since 20 June 2016.

With a bit more L1.5 SeaPRISM data, will track/analyze any systemtic discripencies with NOAA STAR MSL12 and NASA Ocean Color Products.

State of reprocessing old SeaPrism pre June 2016 Platform Eureka SeaPRISM data (both NOAA STAR & NASA)?

December 2015 NOAA Nancy Foster Cruise Measurements

HyperPro Measurements



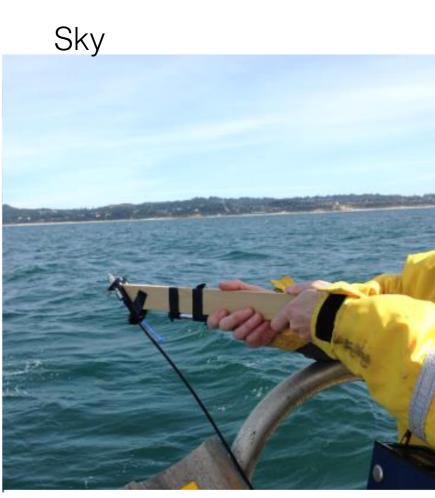




Spectral Evolution Measurements







ee	Spectral Evolution and HyperPRO matches shadded.							
Day	Sta	Time	Lat	Lon	~Time_Diff			
339	V	1848			_			
	6	1800	24.42319	-77.32309	-50	X		
	7	2100	24.38379	-77.28607	130			
340	V	1829						
	8	1830	23.66923	-76.58686	1	X		
	9	2030	23.67043	-76.59076	120			
341								
342	V	1754						
	12	1930	28.72759	-80.43781	95	X		
343	V	1916	20 72400	00 50070	075			
	13	1440	30.72109	-80.53379	-275 75			
	14	1800	30.92241	-80.60434	-75			
244	15	1930	30.98747	-80.53848	15	X		
344	V	1857	21 15040	77 675200	260			
	16	1440	31.15840	-77 . 675208	-260			
	17 18	1745	31.16818 31.07281	-77.734846 -77.53271	-95 20	v		
2/5	Λ	1920 1838	31.0/201	-//.532/1	20	X		
345	v 19	1345	32,22296		-260			
	20	1630	32.49639	-77.854955	-125			
	21	1900	32.63534	-77.424925	20	x		
	22	2100	32103334	771424323	200	^		
346	V	1819			200			
540	23	1420	33,10018	-78.247406	-220			
	24	1730	33.24041	-78.006083	-45	X		
	25	1945	33.07888	-78.211748	85			
347	V	1800						
	26	1516	32.16127	-79.316675	-165			
	27	1820	32.19267	-79.093385	20	X		

VIIRS and HyperPRO matches marked by 'x'

VIIRS NOAA STAR MSL12

Spectral Evolution Automate Processing from Radiance to Rrs

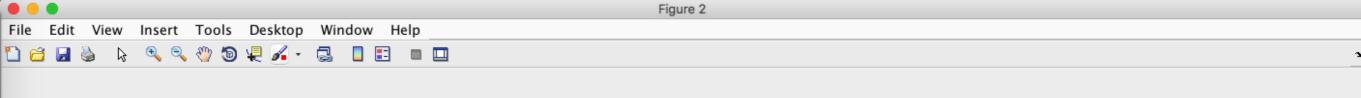
Settings: NOAA Cruise Station 6

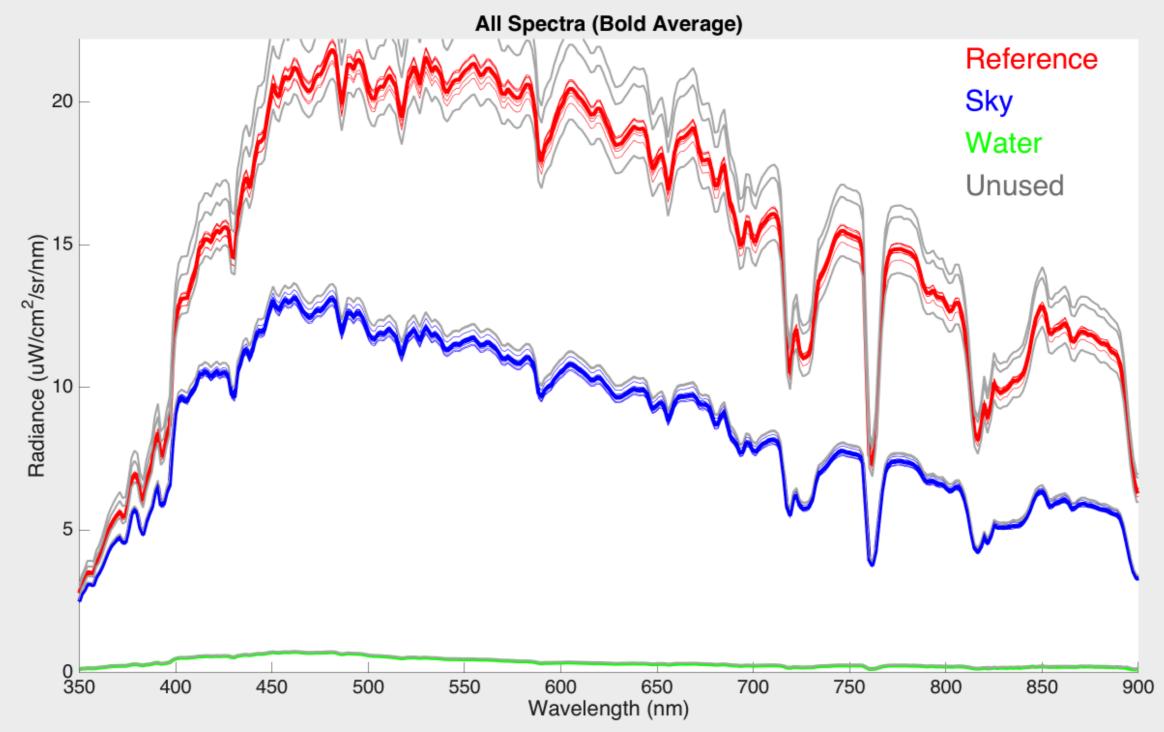
Year = 2015 Month = 12 Day = 05 Hour = 17 Minute = 35 Seconds = 0

Lat = 24.4867 Lon = -77.3204 Alt = 0 Wind_Speed = 3

Sigma_Water = 2 Sigma Sky = 1.5 Sigma_Reference = 1

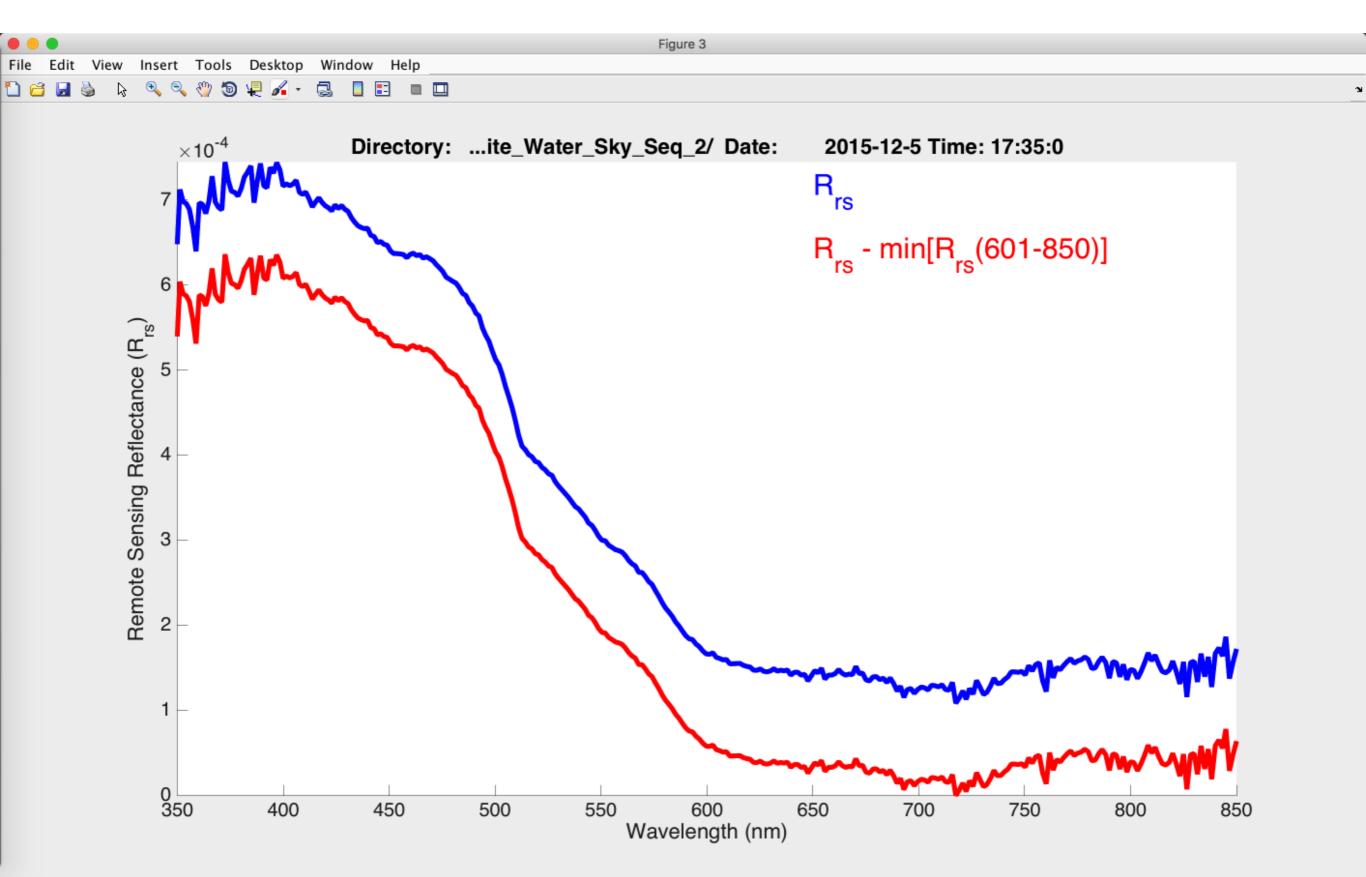
Scale = 3 (0 Fixed-30; 1 Water Max; 2 Sky Max; 3 Reference Max)

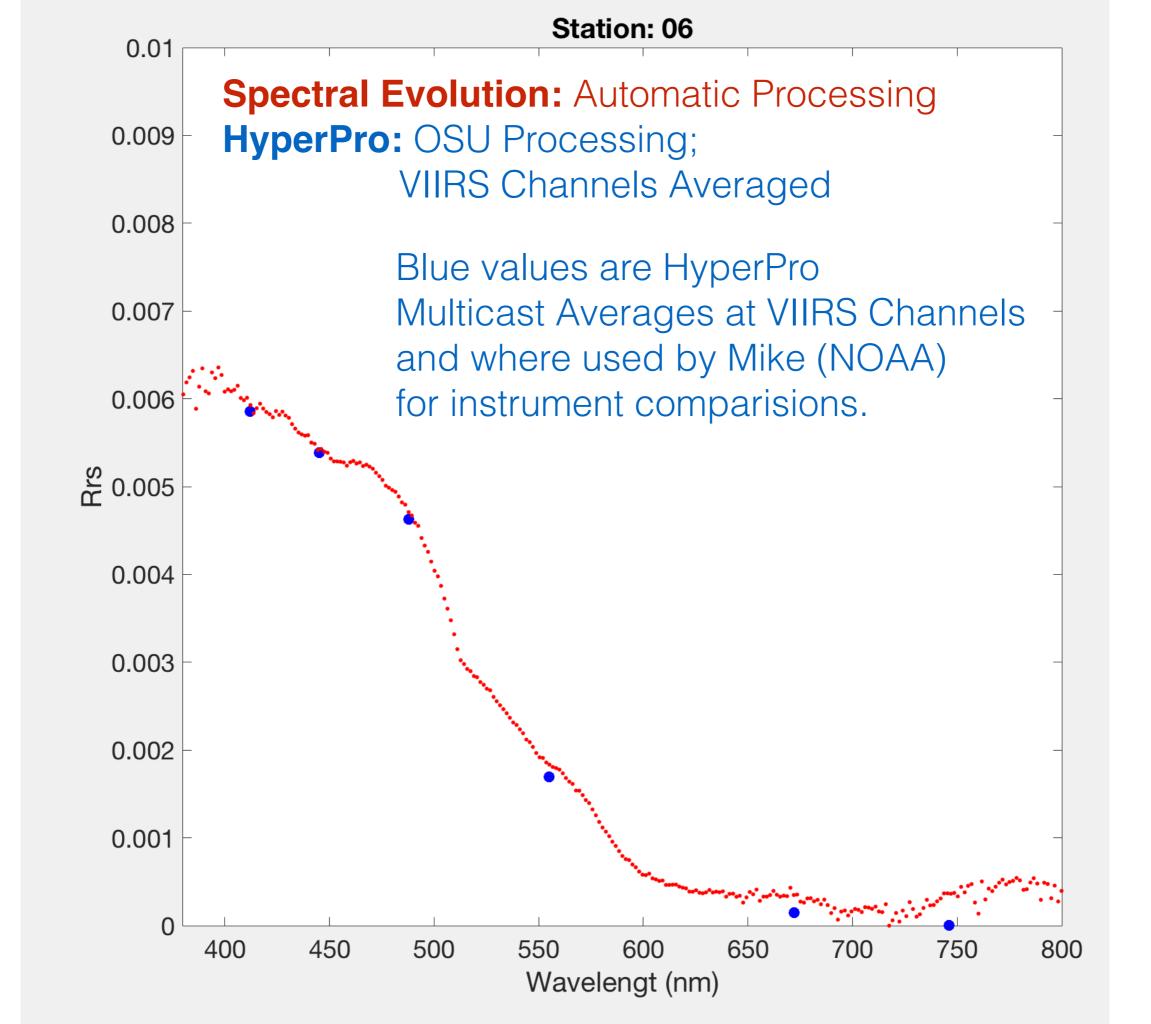


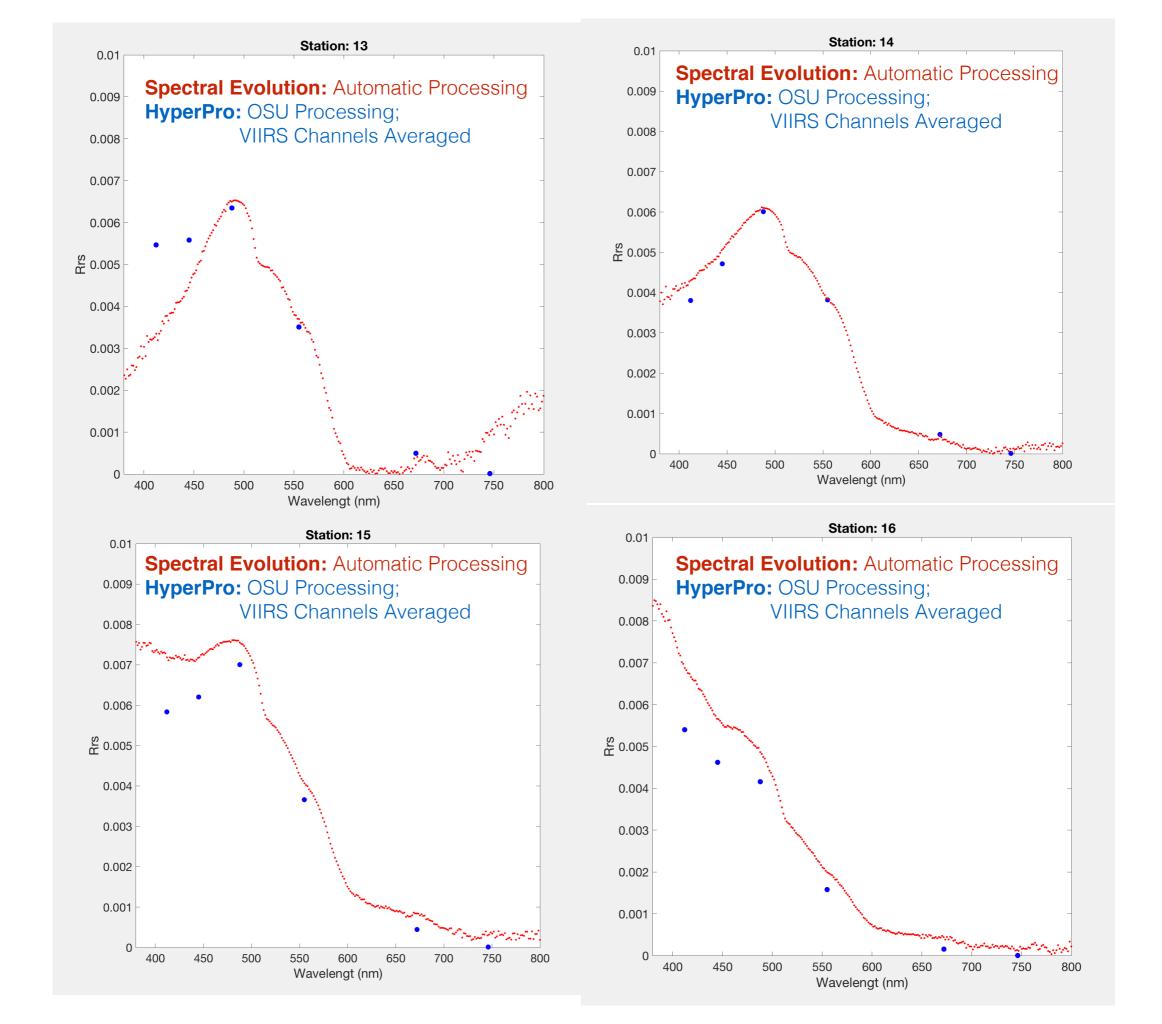


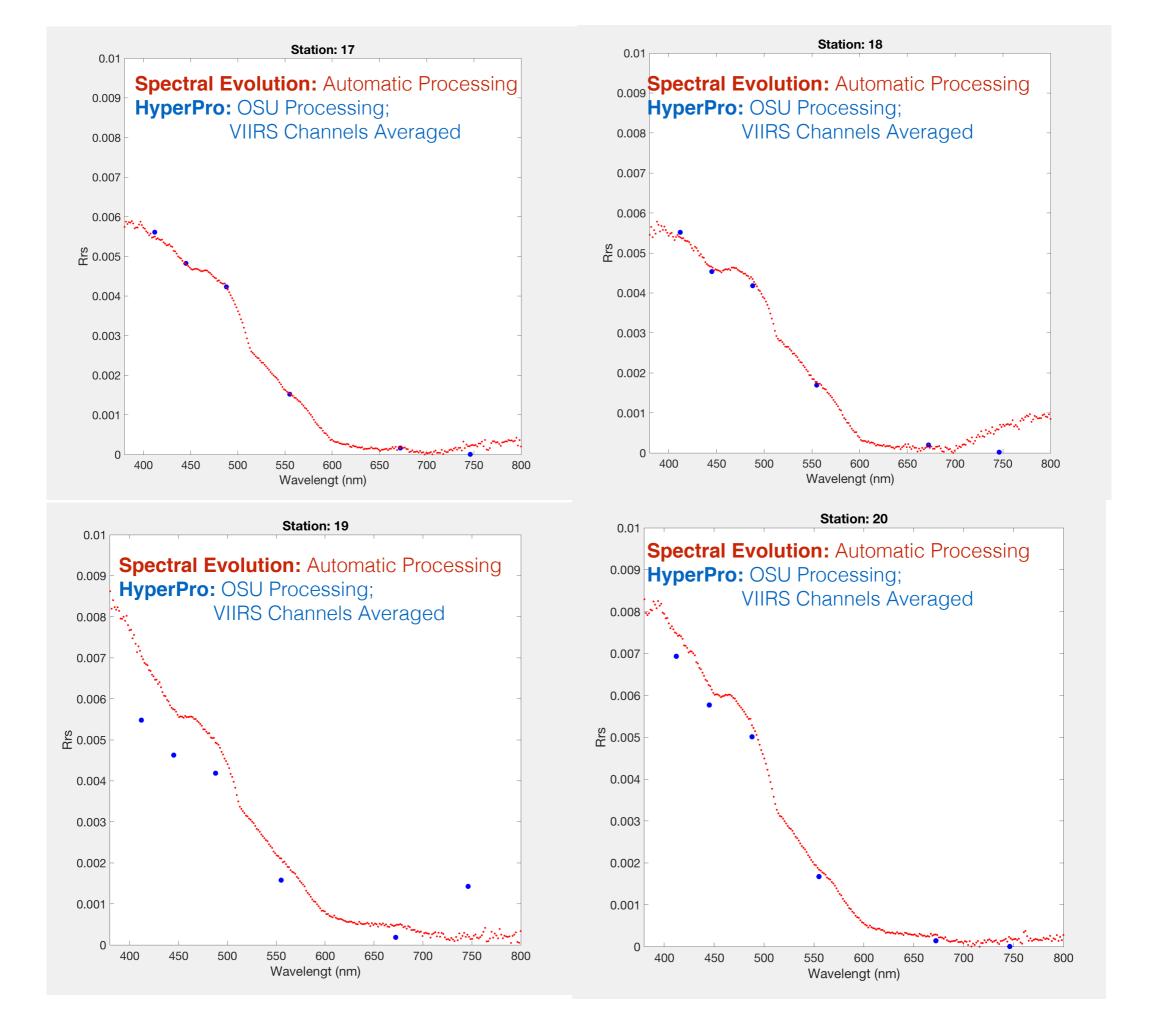
Red Adjustment for Rrs

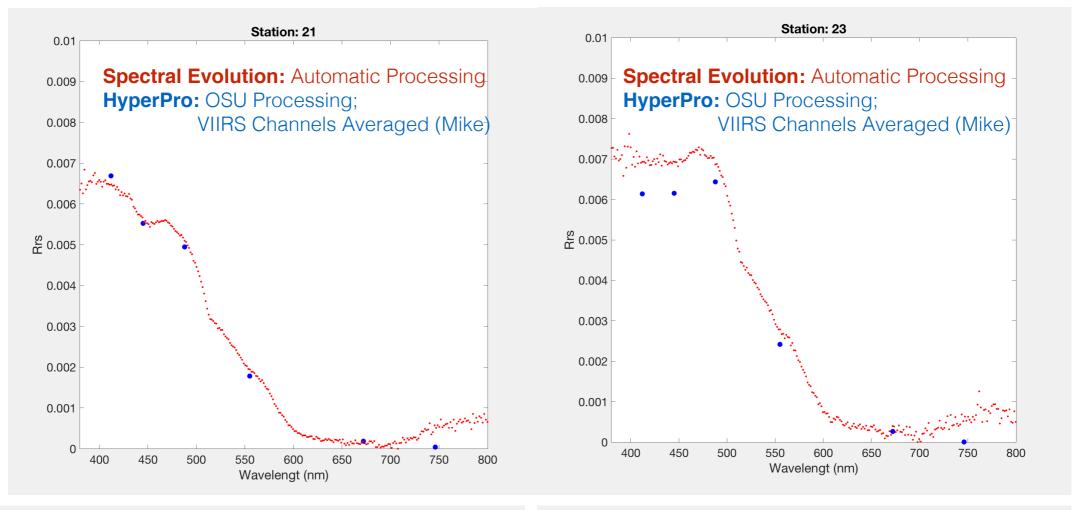
NOAA Cruise Station 6

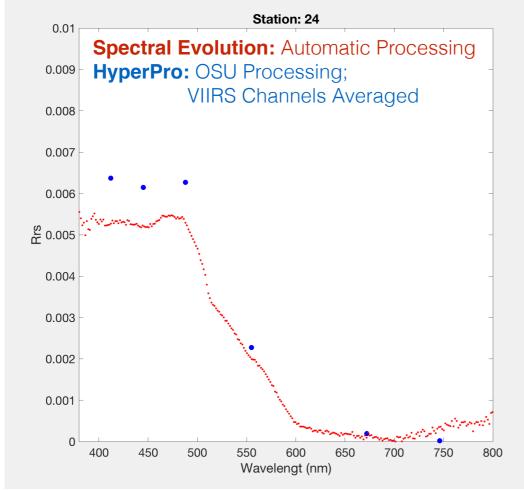


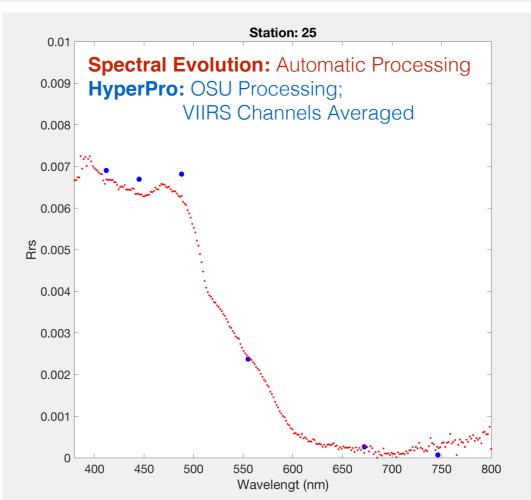












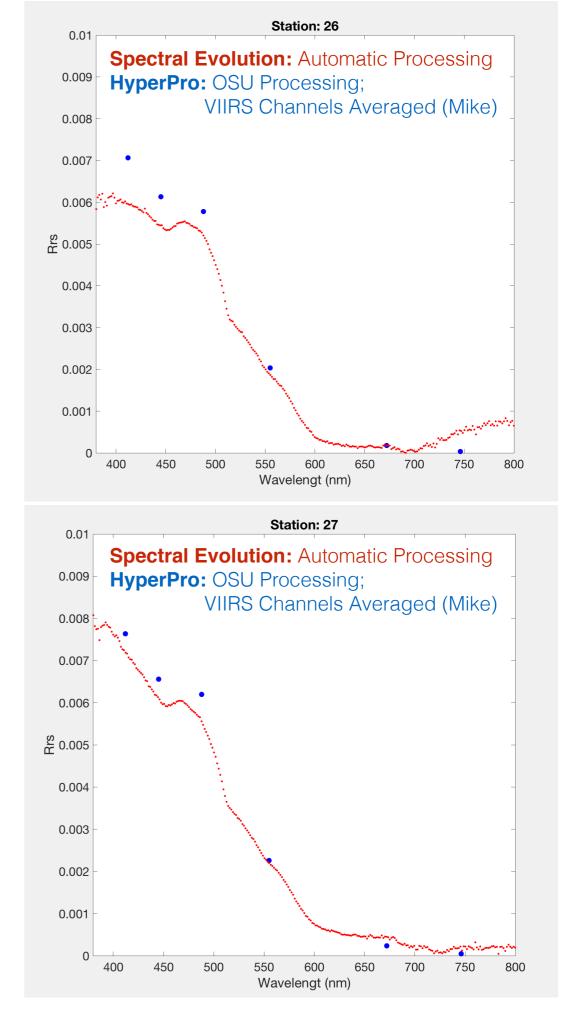
Spectral Evolution 90/40 Protocol & Automated Processing Reliable

Often anomalously high values above 700 nm (measurement artifacts or instrument?)

Sometimes low values below 400 nm.

Automated processing could be extended to other instruments (ASD).

Questions: Tracking down systematic differences to measurement artifacts; height (boat reflections), ship state (rocking), sea state (white caps),



Oregon State and USC Summary for 2015-2016 West Coast Products: Summary

Resolved USC ('Platform Eureka') NASA Aeronet SeaPRISM issues. (Finally) Getting consisten data from Southern California Platform Eureka SeaPRISM (as of 20 June 2016)!

With reprocessing (Pre June 2016), will redo Platform Eureka comparisions to VIIRS and continue to check consistency.

Developed protocols for above water spectrometry with new instrument: Spectral Evolution Field Spectrometer, and validated against Satlantic Optical Profiler (HyperPRO).

Automated protocols can be extended to other instruments like ASD.

Supplied 'SeaBASS' type data to NOAA (Veronica) for all cruises between 2014-2016 (HyperPro, Spectral Evolution, HPLC, IOP's) San Francisco Bay Newport Southern California Hawaii

OSU December 2016 'Nancy Foster' Cruise Report at: http://meris.coas.oregonstate.edu/tmp/
OSU_NOAA_CRUISE_REPORT_2015_12/